

## REMARKS

This application has been reviewed in light of the Office action dated August 20, 2004. Claims 1-9 are pending in the application; claims 10-20 have been cancelled without prejudice. Claims 21 and 22 have been added. No new matter has been introduced. The Examiner's reconsideration of the rejection in view of the amendment and the following remarks is respectfully requested.

By the Office Action, claims 1, 3, 4, 8 and 9 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0102826 A1 to Shimamoto et al. (hereinafter Shimamoto). The Applicant respectfully disagrees with the rejection.

Shimamoto is directed to a method for creating a Ru electrode for a capacitor. The electrode is formed by a CVD process with a low amount oxygen. In this way, the Ru layer does not supply damaging oxygen to the adjacent barrier layer after fabrication of the device. The oxygen damages the barrier layer resulting in poor performance of the capacitor. The barrier layer suggested in Shimamoto is a TaN layer and not Ru or Re. Nowhere in Shimamoto is a barrier layer disclosed or suggested which includes a metal form of Ru or Re.

Claim 1 of the present invention, includes, *inter alia*, a barrier layer formed between the first material and the second material to prevent diffusion between the first material and the second material, the barrier layer includes a metal form of at least one of Ru and Re.

The electrode of Ru in Shimamoto is not a barrier layer, it is an electrode. The low oxygen content in the Ru electrode of Shimamoto is to protect the adjacent barrier layer, which is not a metal form of Ru or Re. In fact, nowhere in Shimamoto is a barrier layer formed

between the first material and the second material to prevent diffusion between the first material and the second material, where the barrier layer includes a metal form of at least one of Ru and Re disclosed or suggested. Reconsideration of the rejection is earnestly solicited for at least the reasons stated.

By the Office Action, claims 2 and 5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shimamoto in view of U.S. Patent Application Publication No. 2002/0197856 A1 to Matsuse et al. (hereinafter Matsuse). The Applicant respectfully disagrees with the rejection.

Matsuse describes a method of forming a barrier layer and includes Ru in a nitride form.  $\text{RuN}_x$  is a dielectric material. Matsuse fails to disclose or suggest the use of a metal form of at least one of Ru and Re as a barrier layer. As such, Matsuse fails to cure the deficiencies of Shimamoto. Therefore, the cited combination, with references taken singly or together, fails to disclose or suggest a barrier layer formed between the first material and the second material to prevent diffusion between the first material and the second material, the barrier layer including a metal form of at least one of Ru and Re as recited in claim 1. Claims 2 and 5 are believed to be in condition for allowance at least due to their dependency from claim 1. Reconsideration of the rejection is earnestly solicited.

By the Office Action, claims 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shimamoto. The Applicant respectfully disagrees with the rejection.

Initially, claims 6 and 7 are not believed to be product by process claims. The temperature ranges given in the claims refers to the metallic phase of the metal provided in the barrier layer not how to form the layer.

In addition claims 6 and 7 are believed to be in condition for allowance for at least the reasons stated above. Reconsideration is earnestly solicited.

Claim 1-9 and 21-22 are pending in the case.

In view of the foregoing amendments and remarks, it is respectfully submitted that all the claims now pending in the application are in condition for allowance. Early and favorable reconsideration of the case is respectfully requested.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's IBM Deposit Account No. 50-0510.

Respectfully submitted,

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